

METHOD AND SYSTEM FOR THE DIRECT MANIPULATION OF INFORMATION, INCLUDING NON-DEFAULT DRAG AND DROP OPERATION

CROSS-REFERENCE TO RELATED APPLICATION

This application is a division of U.S. patent application Ser. No. 08/278,455, filed Jul. 21, 1994, now abandoned, which is a continuation-in-part of Ser. No. 08/054,565, filed on Apr. 28, 1993, now abandoned, which is a continuation-in-part of Ser. No. 07/794,063, filed on Nov. 19, 1991, now abandoned.

TECHNICAL FIELD

The present invention relates generally to data processing system and, more particularly, to the direct manipulation of information by users, including drag and drop operations.

BACKGROUND OF THE INVENTION

The ability to manipulate selected portions of text in a document is a common feature of word processing programs. Presently, there are word processing programs which allow a user to select a string of text and manipulate it in some way, such as moving it to a new location on the document, copying it to a new location on the document or deleting it from a document. The problem with such prior art systems is that they require a user to go through several time-consuming steps before the text manipulation is actually carried out.

For example, to move a string of text from one location to another in a document using a typical prior art system, a user is required to 1) select the string of text to be manipulated; 2) delete or "cut" the selected string of text from the location using a combination of keys or by selecting the delete or cut command; 3) move the insertion point to the new location on the document where the selected string of text is to be moved; and 4) insert or "paste" the selected string of text to the new location using a combination of keys or by selecting the insert or paste command. Similar steps are required for copying text from one location to another in a document.

In word processing systems such as Microsoft Word, that support mouse operations, a user may select text with a mouse by positioning the point at the beginning of the selection, depressing a predefined mouse button, dragging the insertion point to the end of the selection while holding down the mouse button and then releasing the mouse button. After selection, cut and paste operations, such as described above, may be performed on the selected text.

The prior art systems require a user to be familiar with a variety of function keys and edit commands. When the user is making numerous revisions to a document, it is inconvenient to perform so many steps in order to move or copy text. The user is forced to perform awkward key combinations, such as depressing the Shift key and the Delete key at the same time. No technique is known in the word processing environment for moving or copying text without going through time-consuming cut and paste type operations or performing awkward key combinations.

SUMMARY OF THE INVENTION

In accordance with the first aspect of the present invention, a method and system is provided for directly manipulating text in a word processing environment or the

like. After a user has selected text to be manipulated, the manipulation may be carried out with little effort on the part of the user. In accordance with this aspect of the present invention, the user merely positions the mouse pointer over the selected text, depresses and holds down a predefined mouse button, drags the insertion point to a new location and then releases the mouse button. Depending on whether the Alt key was depressed when the mouse button was released, the user may be presented with options such as whether the manipulation should be to move, copy or link the selected text, or the selected text may be moved and no option presented.

In accordance with another aspect of the present invention, a method is practiced in a data processing system having an input device and a video display. In this method, a source-visual element, such as an icon that is associated with the source object, is displayed on the video display along with a cursor and a target-visual element, such as an icon that is associated with the target object. The source-visual element is selected for movement in response to a user positioning the cursor in proximity with the source-visual element using the input device. The input device may be a mouse with at least two buttons. The source-visual element is moved on the video display in response to use of the input device by the user. The source-visual element is displayed on the video display in proximity to the target-visual element. The source-visual element may be moved in response to the user depressing a predetermined one of the buttons of the mouse and moving the mouse when the input device is a mouse with at least two buttons.

The source-visual element is dropped on the target-visual element in response to the use of the input device by the user while the source-visual element is in proximity with the target-visual element. If the input device is a mouse with at least two buttons, the source-visual element may be dropped by releasing the predetermined one of the buttons that was depressed to move the source-visual element. The menu of operations is then displayed on the video display. One of these operations may be selected by the user and involve the source object and the target object. The system determines if any of the operations displayed on the menu is selected by the user and determines the identity of any such user-selected operation. The system then performs the user-selected operation with the source object and the target object.

The menu of operations displayed on the video display may display a default operation. The default operation may have a visual indication or queue which indicates that it is the default operation. For example, the default operation may be boldfaced.

In accordance with another aspect of the present invention, a method is practiced wherein the first visual element that is associated with the first object is dragged across the video display to be in proximity with the second visual element that is associated with the second object on the video display. The drag is performed in response to a user using the input device (such as a mouse). The first visual element is dropped onto the second visual element in response to the user using the input device to perform a first default operation. The first default operation involves the first object of the second object. When the input device is a mouse with the first button and a second button, the drag and the drop is performed using the first button of the mouse.

A third visual element that is associated with the third object is dragged across the video display in response to the user using the input device to be proximity of a fourth visual